

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VII (OLD) EXAMINATION – SUMMER 2019****Subject Code: 170701****Date: 18/05/2019****Subject Name: Compiler Design****Time: 02:30 PM TO 05:00 PM****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

- Q.1** (a) Explain different phases of compiler. **07**
(b) (i) What is a symbol table? Discuss the most suitable data structure for it by stating merits / demerits. **04**
(ii) Explain linker & loader. **03**
- Q.2** (a) What is the difference between parse tree and syntax tree? Write appropriate grammar and draw parse as well as syntax tree for $a^*(a-a^a)$. **07**
(b) Construct a DFA without constructing NFA for following regular expression. Find minimized DFA. : $(a \mid b)^*a$ **07**
- OR**
- (b) Construct NFA for following Regular Expression : $(a \mid b)^*abb$. **07**
- Q.3** (a) (i) Compare top-down and bottom-up parser. **07**
(ii) Explain right-most-derivation-in-reverse with the help of an example.
(b) What is left recursion? Eliminate the left recursion from the following grammar. **07**
$$E \rightarrow E + T \mid T$$
$$T \rightarrow T * F \mid F$$
$$F \rightarrow (E) \mid id$$
- OR**
- Q.3** (a) Construct predictive parsing table for following. **07**
$$S \rightarrow A$$
$$A \rightarrow aB \mid Ad$$
$$B \rightarrow bBC \mid f$$
$$C \rightarrow g$$

(b) Explain Operator precedence Parsing technique in detail. **07**
- Q.4** (a) What is an activation record? Explain how they are used to access various local and global variables. **07**
(b) Explain: Error Recovery Strategies in Compiler in brief **07**
- OR**
- Q.4** (a) Translate the expression $-(a+b)*(c+d)+(a+b+c)$ into **07**
1. Quadruples
2. Triples
3. Indirect triples
(b) Explain various code optimization technique **07**
- Q.5** (a) Write a brief note on input buffering techniques **07**
(b) Define: DAG. Explain DAG representation of basic block with example. **07**
- OR**
- Q.5** (a) Discuss issues in the design of code generation **07**
(b) Explain Peephole Optimization in detail. **07**
